

REMARKS

Claims 1-22 are pending in the subject patent application with claims 2 and 3 being currently amended. Claims 1 and 4-22 have not been changed relative to their immediate prior version.

It should be noted that claims 2 and 3 have been amended solely for the purpose of providing antecedent basis for terms found by the Examiner to be lacking in antecedent basis in a rejection under 35 USC §112, second paragraph. The amendments to claims 2 and 3 do not introduce any new matter. By these amendments, the rejection of claims 2 and 3 under 35 USC §112, second paragraph, is overcome and should rightfully be withdrawn.

The rejection of claims 1, 6, 8-16 and 20-22 as being anticipated by Trott et al, the rejection of claims 2-5 as being unpatentable over Trott et al in view of Aznoian et al, the rejection of claims 17-19 as being unpatentable over Trott et al in view of applicant's disclosure, and the rejection of claims 1 and 9 on the ground of non-statutory obviousness-type double patenting over claim 35 of U.S. Patent No. 6,312, 438 are all respectfully traversed for the following reasons.

Independent claim 1 recites "an elongate flexible inner tubular member rotatably disposed within said outer tubular member to transmit torque in forward and reverse rotational directions, said inner tubular member comprising an elongate inner tube of solid wall construction ..., a continuous helical cut formed in a stepped pattern along a length portion of said inner tube ..., said helical cut being formed in said inner tube at an angle in a first direction about said inner tube ..., and no more than a single layer of spiral wrap disposed over said helical cut, said single layer of spiral wrap extending

along said length portion at said angle in a second direction, opposite said first direction, about said inner tube.” As explained further below, Trott et al does not disclose or suggest an elongate flexible inner tubular member as recited in independent claim 1, and the rejection of claim 1 as being anticipated by Trott et al is clearly improper.

The Examiner interprets Trott et al as disclosing an inner tubular member comprising a solid tube with a continuous helical cut formed in a stepped pattern at an angle in a first direction (Fig. 7, element 60) and a single layer of spiral wrap (Fig. 7, element 64) disposed over the helical cut at an angle in a second direction, opposite the first direction. The Examiner’s interpretation of Trott et al is contrary to Trott et al’s own description, is illogical and inconsistent, and can only be based on impermissible hindsight made possible from the subject invention itself. With respect to the element 64 which the Examiner equates to the recited single layer of spiral wrap, Trott et al explicitly disclose this element as a “middle spiral 64” of flat strip material wound to define a channel 70 (column 7, lines 30-32 and 34-35; column 8, lines 59-61). Trott et al expressly disclose element 60 to be an “inner spiral 60” of strip material wound to define a channel 62 (column 7, lines 25-30; column 8, lines 59-61). Trott et al thusly describes the element 60 and the element 64 to be the same in essentially all respects except that the channel 70 of middle spiral 64 has a diameter slightly greater than the external diameter of the inner spiral 60, such that the inner spiral 60 is slidably disposed within and in close proximity to the middle spiral 64 (column 7, lines 34-39). In view of Trott et al’s unambiguous disclosure, it is improper and illogical for the Examiner to construe the middle spiral 64 as being a spiral wrap and then take a completely

contradictory position with respect to the inner spiral 60 by construing it to be a solid tube with a continuous helical cut formed therein. The inner spiral 60 and the middle spiral 64 are both disclosed by Trott et al as a wound strip of material, and neither is a tube of solid wall construction having a continuous helical cut formed along a length portion thereof. With respect to the inner spiral 60 in particular, Trott et al describe in detail how the inner spiral 60 is a strip of material wound upon a mandrel M (column 7, lines 26-28), and these teachings of Trott et al definitely lead away from the concept of an inner tube of solid wall construction having a continuous helical cut formed along a length portion thereof. In addition to Trott et al failing to disclose or suggest an inner tube of solid wall construction having a continuous helical cut formed along a length portion thereof, Trott et al do not whatsoever contemplate a continuous helical cut formed in a stepped pattern. Trott et al clearly illustrate (Fig. 7) the strip of material forming the inner spiral 60 to be of uniform width throughout the length of the inner spiral 60, without there being any stepped pattern to a helical cut of the spiral. In contrast, independent claim 1 requires the solid wall inner tube to have not only a helical cut but, in addition, requires the helical cut to be formed in a stepped pattern.

A further flaw in the Examiner's reasoning concerns the mistaken interpretation of the middle spiral 64 of Trott et al as being equivalent to "no more than a single layer of spiral wrap disposed over said helical cut" as recited in independent claim 1. In contrast to the claimed invention, Trott et al expressly require that there be two additional spirals, i.e. middle spiral 64 and outer spiral 72, disposed over the inner spiral 60. All three spirals 60, 64 and 72 are fastened together at their ends, which again provides positive teachings leading away from the concept of the inner spiral 60 being an inner tube of solid wall

construction having a helical cut formed along a length portion thereof. According to Trott et al's own explicit teachings, all three spirals 60, 64 and 72 are required in order for the flexible transmission means 22 to operate to transmit torque in both forward and reverse rotational directions (column 8, line 65 - column 9, line 1). Trott et al do not disclose or suggest any way for the flexible transmission means 22 to transmit torque in both the forward and reverse rotational directions without there being two additional spirals, i.e. middle spiral 64 and outer spiral 72, disposed over the inner spiral 60. The flexible inner tubular member recited in claim 1, in contrast, is recited to be rotatably disposed within the outer tubular member to transmit torque in forward and reverse rotational directions while requiring no more than a single layer of spiral wrap disposed over a helical cut formed in the solid wall inner tube. In light of the foregoing, the rejection of independent claim 1 as being anticipated by Trott et al is clearly improper. Independent claim 1 is thusly submitted to be patentable over Trott et al and should be allowed along with its dependent claims 2-8.

Dependent claims 7 and 8 in particular stand rejected improperly as being anticipated by Trott et al. Claim 7 recites the stepped pattern as comprising "repeating interconnected steps" and claim 8 recites the steps as repeating "at rotational intervals of about 100 degrees about said inner tube." As pointed out above, the inner spiral 60 of Trott et al is a uniform width strip of material wound in a plain spiral which does not and cannot result in a stepped pattern, much less one comprising repeating interconnected steps or one with interconnected steps that repeat at rotational intervals of about 100 degrees. Claims 7 and 8 are thusly submitted to be clearly patentable over Trott et al for the additional features recited therein as well as being allowable with independent claim 1.

Dependent claims 2-5 stand rejected by the Examiner as being unpatentable over

Trott et al in view of Aznoian et al, but Aznoian et al fail to rectify any of the aforementioned deficiencies of Trott et al. Rather, Aznoian et al was relied on by the Examiner only for the teaching of an endoscopic instrument having a plurality of bends, and this teaching does not rectify the deficiencies of Trott et al discussed above in connection with independent claim 1.

Independent claim 9 recites “an elongate flexible inner tubular member rotatably disposed within said outer tubular member to transmit torque in forward and reverse rotational directions, said inner tubular member comprising an elongate inner tube of solid wall construction ..., a continuous helical cut formed in a stepped pattern along a length portion of said inner tube ..., and no more than one layer of spiral wrap wound over said length portion, said stepped pattern comprising repeating interconnected steps each made up of a transverse cut segment extending transverse to the length of said inner tube in a first direction about said inner tube and at an angle to a plane perpendicular to said central longitudinal axis, and a longitudinal cut segment extending from said transverse cut segment along the length of said inner tube”. As discussed above in connection with independent claim 1, Trott et al do not disclose or suggest a flexible inner tubular member having all of the features of being rotatably disposed within an outer tubular member to transmit torque in forward and reverse rotational directions, of being comprised of an inner tube of solid wall construction having a continuous cut formed along a length portion thereof, of having a continuous cut that is both helical and formed in a stepped pattern and of having no more than one layer of spiral wrap wound over the length portion. Since Trott et al do not disclose or suggest a continuous cut that is both helical and formed in a stepped pattern in a solid wall inner

Examiner's rejection of independent claim 14 as being anticipated by Trott et al demonstrates a lack of understanding of the claimed invention by the Examiner. As explained in the specification of the subject patent application, angled tissue cutting instruments and straight tissue cutting instruments are commonly available in various standard diametric sizes corresponding to the outer diameter of the outer member of the instrument. However, comparing an angled tissue cutting instrument and a straight tissue cutting instrument of the same diametric size, the flexible inner member of the angled tissue cutting instrument if constructed in accordance with Trott et al must have a smaller size inner diameter than the inner diameter of the straight inner member of the straight tissue cutting instrument due to the greater wall thickness of the flexible inner member resulting from the multiple spiral layers disposed over the inner spiral, the fact that the outer diameter of the flexible inner member must still fit within the outer member while being of greater wall thickness, and the fact that design factors limit the extent to which the wall thicknesses of the inner and outer members can be minimized in either type of instrument. In the claimed method, an angled tissue cutting instrument is fabricated using an outer tubular member whose outer diameter is the same size as the outer diameter of a straight tissue cutting instrument of the same size as the angled tissue cutting instrument, and using an inner tube whose inner diameter is the same size as the inner diameter of the inner tube of the straight tissue cutting instrument. This is accomplished in the claimed method by forming a helical cut in an inner tube of solid wall construction prior to having the helical cut formed therein and having an inner diameter the same size as the inner diameter of an inner tube forming the inner tubular member of a straight tissue cutting instrument of the same diametric size as the angled

tissue cutting instrument, and by wrapping a continuous strip of material spirally over the helically cut length portion of the inner tube to form no more than a single layer of spiral wrap over the inner tube.

As pointed out above in connection with independent claim 1, Trott et al first of all fails to disclose or suggest the step of forming a helical cut in an inner tube that is of solid wall construction prior to having the helical cut formed therein and second of all fails to disclose or suggest wrapping a strip of material spirally over the helically cut length portion of the inner tube to form no more than a single layer of spiral wrap over the inner tube. In Trott et al, the element 60 is the inner spiral formed by winding a strip of material upon a mandrel M and does not involve forming a helical cut in an inner tube of solid wall construction prior to the helical cut being formed therein. The method of fabricating the flexible transmission means 22 disclosed by Trott et al further involves assembling the middle spiral 64 and the outer spiral 72 over the inner spiral 60, thereby forming two layers of spirals over the inner spiral 60. All three layers of spirals 60, 64 and 72 are explicitly disclosed by Trott et al to be essential to operation of the flexible transmission means 22. This is totally different from the step of wrapping recited in claim 14 which requires no more than a single layer of spiral wrap over the inner tube. The step of forming recited in claim 14 is not disclosed or suggested by Trott et al for the further reason that Trott et al do not disclose or suggest that the inner spiral 60 has an inner diameter the same size as the inner diameter of an inner tube forming the inner tubular member of a straight tissue cutting instrument of the same diametric size as the angled surgical tool 10 disclosed by Trott et al. In fact, as explained in the specification of the subject patent application and summarized above, it is not possible for the inner spiral 60 to have an inner diameter the

same size as the inner diameter of an inner tube forming the inner tubular member of the same size straight tissue cutting instrument. Rather, the greater wall thickness resulting from the middle spiral 64 and the outer spiral 72 disposed over the inner spiral 60 requires that the inner diameter of inner spiral 60 be smaller than the inner diameter of the inner member of the same size straight tissue cutting instrument in order for the flexible transmission means 22 to fit within the same size outer member. It follows that the step of inserting recited in claim 14, which requires insertion of the flexible inner tubular member within an outer tubular member having an outer diameter the same size as the outer diameter of a straight outer tubular member of a straight tissue cutting instrument of the same diametric size as the angled tissue cutting instrument, is not and cannot be disclosed or suggested by Trott et al. Accordingly, independent claim 14 is submitted to be clearly patentable over Trott et al and should be allowed along with its dependent claims 15-22.

Dependent claim 15 recites forming the helical cut in an elongate inner tube which may also be used as the inner tubular member of the same size straight tissue cutting instrument. This step is not possible from a technological standpoint based on the disclosure of Trott et al.

Dependent claim 16 requires forming the helical cut in a stepped pattern comprising repeating interconnected steps, and dependent claim 22 calls for the steps to be formed at rotational intervals of about 100 degrees. As pointed out above, Trott et al do not whatsoever contemplate a helical cut formed in a stepped pattern, much less one comprising repeating interconnected steps formed at rotational intervals of about 100 degrees.

Dependent claims 17-19 each recites the step of forming the helical cut in the


inner tube of a specific size angled tissue cutting instrument and requires the inner diameter of the inner tube to be the same size as the inner diameter of the inner tubular member of the same size straight tissue cutting instrument. The rejection of dependent claims 17-19 as being obvious from Trott et al in view of applicant's disclosure is submitted to be improper because, as explained above in connection with independent claim 14, applicant's disclosure in fact shows why the claimed method is not obvious from Trott et al. Accordingly, claims 17-19 are submitted to be clearly patentable for the additional limitations recited therein as well as being allowable with independent claim 14.

The rejection of claims 1 and 9 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 35 of U.S. Patent No. 6,312,438 is submitted to be unjustified and without merit. In support of the double patenting rejection, the Examiner states that all of the elements of claims 1 and 9 of the subject application are found in claim 35 (as it encompasses independent claim 34) of U.S. Patent No. 6,312, 438 and further asserts that the only difference between claims 1 and 9 of the subject application and claim 35 of the patent lies in the fact that the patent claim includes many more elements and is thus a "species" of the "generic" invention of claims 1 and 9. Applicant strongly disagrees and maintains that all of the elements of claims 1 and 9 of the subject application are not found in claim 35 of the patent. In particular, independent claim 1 of the subject application requires a flexible inner tubular member rotatably disposed within an outer tubular member to transmit torque in forward and reverse rotational directions whereas the inner member of claim 35 of the patent does not call for the inner member to transmit torque in forward and reverse

rotational directions. Claim 1 of the subject application requires a helical cut formed in a stepped pattern along a length portion of the inner tube whereas the feature of a helical cut formed in a stepped pattern is not found in claim 35 of the patent. Claim 1 of the subject application requires no more than a single layer of spiral wrap disposed over the helical cut whereas claim 35 of the patent specifically requires two layers of spiral wraps over the helical cut. The same arguments apply to independent claim 9 of the subject application with respect to claim 35 of the patent and, in addition, independent claim 9 recites the stepped pattern comprising repeating interconnected steps each made up of a transverse cut segment and a longitudinal cut segment and the feature of a stepped pattern as recited in claim 9 is not found in claim 35 of the patent.

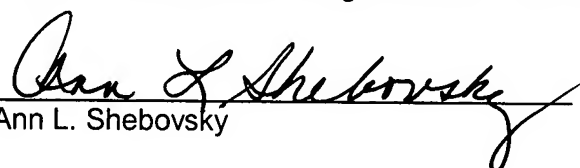
In light of the foregoing, all of the claims in the subject application are submitted to be in condition for allowance. Action in conformance therewith is courteously solicited. Should any issues in the subject application remain unresolved, the Examiner is encouraged to contact the undersigned attorney.

Respectfully submitted,


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